ABSTRACT OF THE DISCLOSURE

The present invention relates to a semiconductor device in which a capacitance element is mounted on a semiconductor substrate as well as a method of fabricating the device. According to the present invention, a substantial lower electrode is formed on a semiconductor substrate through a first insulation film; a peripheral electrode, i.e. the periphery of the lower electrode or a dummy electrode, which has the surface higher than the surface of the lower electrode being formed integrally with or separately from the lower electrode; an upper electrode being formed on the lower electrode through a dielectric film; a capacitance element being formed so that at least the surface of the dielectric film may lie on a level lower than the surface of the peripheral electrode; and a recess surrounded by the peripheral electrode being filled with a smoothing film.

As a result, when the smoothing film is formed, at least the dielectric film does not sustain damage and so a capacitance element having less fluctuation in its characteristics and high reliability can be obtained.

DESCRIPTION OF REFERENCE NUMERALS

10 ... Semiconductor Substrate

12 ... The First Insulation Film

14 ... Polysilicon Dummy Layer

16 ... The Second Insulation Film

18 ... TiN/Al-Si/Ti/TiON/Ti Lamination film

18a, 18b, 18d ... Lower Electrode

18c ... Dummy Electrode

20 ... Dielectric Film

22 ... Upper Electrode

24 ... Smoothing Insulation Film

26 ... Insulation Film

27 ... Inter-layer Insulation Film

28a, 28d ... The First Via-hole

28b, 28c, 28e ... The Second Via-hole

30a, 30b ... The First Upper-layer Wiring Layer

30b, 30c, 30e ... The Second Upper-layer Wiring Layer

32 ... Insulation Dummy Layer

34 ... Polysilicon Dummy Layer